

559, 938

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
14 October 2004 (14.10.2004)

PCT

(10) International Publication Number
WO 2004/088094 A2

(51) International Patent Classification⁷: **F01L**

Lustnauer Strasse 43, 72127 Kusterdingen (DE). **WILD, Andreas** [DE/DE]; Bettweg 17, 72669 Unterensingen (DE).

(21) International Application Number:
PCT/EP2004/003264

(74) Agents: **RICKER, Mathias** et al.; Jones Day, Prinzregentenstrasse 11, 80538 München (DE).

(22) International Filing Date: 26 March 2004 (26.03.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

103 14 683.0	29 March 2003 (29.03.2003)	DE
103 23 665.1	14 May 2003 (14.05.2003)	DE
103 52 677.3	3 November 2003 (03.11.2003)	DE
10 2004 001 343.8	8 January 2004 (08.01.2004)	DE
10 2004 003 327.7	22 January 2004 (22.01.2004)	DE

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(71) Applicants (for all designated States except US): **HYDRAULIK-RING GMBH** [DE/DE]; Am Schlossfeld 5, 97828 Marktheidenfeld (DE). **ENTEC CONSULTING GMBH** [DE/DE]; Im Beil 7, 58675 Hemer (DE).

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(71) Applicant and

(72) Inventor: **BÖSL-FLIERL, Gerlinde** [DE/DE]; Brunnenstrasse 62, 7661 Kaiserslautern (DE).

Published:

— without international search report and to be republished upon receipt of that report

(72) Inventors; and

(75) Inventors/Applicants (for US only): **FLIERL, Rudolf** [DE/DE]; Brunnenstrasse 62, 67661 Kaiserslautern (DE). **HANNIBAL, Wilhelm** [DE/DE]; Im Beil 7, 58675 Hemer (DE). **JUBELT, Michael** [DE/DE]; Otto-Schuster-Strasse 49, 73760 Ostfildern (DE). **KNECHT, Andreas** [DE/DE];

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: VARIABLE VALVE LIFT DEVICE FOR THE LIFT ADJUSTMENT OF GAS-EXCHANGE VALVES OF AN INTERNAL COMBUSTION ENGINE

(57) Abstract: In order to produce a variable valve lift device for the lift adjustment of the gas-exchange valves of an internal combustion engine, by means of which with adjustment forces and holding forces, independently from whether said holding forces and adjustment forces are applied mechanically, hydraulically or electrically, with an adjustment of the valve lift being as cost-effective as possible, and with maximum accuracy of the adjustment or control of the valve lift to be taken between the individual cylinders of a multi-cylinder internal combustion engine, and, moreover, the adjustment possibility of the valve lift of the valves of an internal combustion engine with several cylinders is obtained within smallest tolerances, it is suggested that a valve lift device (1) has a rotatable eccentric shaft (3), which consists of several eccentrics (4, 5) and whereby all possible contours of the eccentrics (4, 5) are positioned within a circle, which is formed by means of the external diameters of a bearing (6, 7) of the eccentric shaft (3).

WO 2004/088094 A2